PROGRESS
OF
MEDICAL SCIENCE

MEDICINE

UNDER THE CHARGE OF
W. S. THAYER, M.D.,
PROFESSOR OF CLINICAL MEDICINE, JOHNS HOPKINS UNIVERSITY, BALTIMORE, MARYLAND,
AND
ROGER S. MORRIS, M.D.,
FREDERICK FORCHHEIMER PROFESSOR OF MEDICINE IN THE UNIVERSITY OF CINCINNATI, CINCINNATI, OHIO.

The Volume of Urine in Young Healthy Adults on a Constant Diet.—ADDIS and WATANABE (*Jour. Biol. Chem.*, 1916, xxvii, 267) have recorded observations on the volume of urine per diem in healthy young adults placed on a constant diet, in which the fluid intake was measured. The authors find that the volume of urine in normal individuals is extremely variable for any single day or part of a day. The average volume of urine when the water intake was 2,070 c.c., varied in twenty individuals from 1,013 to 1,712 c.c. for a twenty-four-hour period, from 684 to 1,195 c.c., for the first twelve hours of the day, and from 501 to 788 c.c. for the first eight hours of the day. The percentage of the twenty-four-hour volume excreted during the twelve hours of the night did not exceed 47 per cent. in any subject.

A Rapid Method for the Diagnosis of Renal Tuberculosis by the Use of the Roentgen-rayed Guinea-pig.—MURPHY and ELLIS have shown (*Jour. Exp. Med.*, 1914, xx, 397) that white mice which have been exposed to the roentgen rays are much more susceptible to bovine tuberculosis than normal animals, a fact which they attribute to destruction of lymphoid tissue. This observation suggested to Morton (*ibid.*, 1916, xxiv, 419) the use of the roentgen-rayed guinea-pig in the diagnosis of renal tuberculosis, in an attempt to shorten the time required (five weeks) in this well-known method of diagnosis. The author finds that the lymphoid cells of the blood of the guinea-pig can be made largely to disappear from the circulation by a single massive exposure to roentgen rays. "The animal was placed in a pasteboard box of such size that it could not move around and then radiated for a period of ten minutes with the Coolidge tube, the target being twelve inches distant from the base of the box. A 5 milliampere current was passed through the tube, backing up eight and one-half inches of spark between points. The Snook interrupterless type of machine was employed. No aluminum or leather filters were used." One to two cubic centimeters of urine were injected intraperitoneally, and after ten days the guinea-pigs were killed and examined. Ten patients with renal tuberculosis furnished material for the tests, and it was found possible by means of the roentgen-rayed guinea-pig to secure a positive result in seven to ten days. Apparently, the test works as well when the guinea-pig is exposed to roentgen rays immediately after inoculation. As in normal (unexposed) guinea-pigs the tubercles are most numerous in spleen, mesenteric lymph glands, and liver.

Pancreatic Diabetes in the Dog.—(I) The Influence of Alkali and Acid upon the Glycosuria and Hyperglycemia. MURLIN and KRAMER (*Jour. Biol. Chem.*, 1916, xxvii, 481) have studied the effect of the administration of alkali and acid on glycosuria and glycemia in depancreatized dogs. They find that sodium bicarbonate and potassium bicarbonate administered by stomach tube may be without immediate effect on the glycosuria and hyperglycemia. A bicarbonate given by mouth to a fasting depancreatized dog may even cause the reappearance of glucose in the urine after it had been starved out. Sodium carbonate (Na_2CO_3) may, on the contrary, reduce the sugar in the urine materially when given by mouth, and when given intravenously, it invariably does so, especially when added to Ringer's or Locke's solution to the amount of about 1 per cent. They furthermore find that the blood sugar does not undergo a compensating increase in percentage, even when the dilution of the blood is accounted for. Dilute hydrochloric acid given by mouth or subcutaneously to the depancreatized dog has, they find, just the opposite effect of alkali—increasing the sugar in the urine without affecting materially the nitrogen elimination—and without causing any effect on the blood sugar. (II) KRAMER, MARKER, and MURLIN (*ibid.*, p. 499), continuing the studies of Murlin and Kramer, have sought to determine the fate of the glucose retained as a result of the feeding of sodium carbonate to depancreatized dogs. They have demonstrated to their own satisfaction that it is not stored as glycogen and that it is not excreted by way of salivary gland, stomach or small intestine. The question whether it is oxidized will be treated in a later communication. (III) MURLIN and KRAMER (*ibid.*, p. 517) have investigated the influence of alkali on the respiratory metabolism of dogs after partial and total pancreatectomy. In partially depancreatized dogs which still have some capacity to oxidize glucose, the administration of sodium carbonate or sodium hydroxide with glucose is followed by a greater oxidation of glucose than when either is administered alone. Sodium carbonate itself causes but a slight increase in respiratory quotient, or none, whether administered per os or intravenously, to normal or diabetic dogs. Thus it seems that while sodium carbonate and sodium hydroxide alone cannot restore the lost function to an organism completely deprived of its ability to oxidize glucose, either substance can improve the capacity of the organism as a whole to oxidize glucose when this function is more or less crippled, although not completely lost.